

REMARKS

The non-final Office Action of January 28, 2004 has been received and carefully reviewed. Accordingly, claims 1 and 9 have been amended and claims 5-8 have been canceled; therefore, claims 1-4 and 9-19 remain pending of which claims 11-19 are withdrawn as being directed to a non-elected invention. In view of the amendments above and the following remarks, further consideration of this application is now requested.

With regard to the Examiner's rejections of:

Claims 1 and 7-10, under 35 U.S.C. § 103(a), as being rendered obvious in view of the combination of teachings of the Sugitani ('830) and Schuster ('136) patents,

Claims 2-3, under 35 U.S.C. § 103(a), as being rendered obvious in view of the combination of teachings of the Sugitani ('830), Schuster ('136) and Johnson ('871) patents,

Claim 4, under 35 U.S.C. § 103(a), as being rendered obvious in view of the combination of teachings of the Sugitani ('830), Schuster ('136) and van der Wolf et al. ('328) patents, and

Claims 5-6, under 35 U.S.C. § 103(a), as being rendered obvious in view of the combination of teachings of the Sugitani ('830), Schuster ('136) and Rothwell ('700) patents,

the Applicant respectfully traverses each of these rejections.

The invention as presently claimed is directed to method of manufacturing a discharge lamp by adsorbing a layer of mercury bromide (HgBr₂) onto a porous body of sintered tungsten in order to introduce an exact and very small amount of mercury bromide into the discharge vessel upon heating of the porous body containing the adsorbed material, i.e., commonly defined as an accumulation of molecules to form a thin film on the surface of a solid (see The Free Dictionary.com definition attached). The invention is based on the observation that mercury bromide can be adsorbed in a monomolecular layer onto the body of sintered tungsten. As a result, the amount of mercury bromide adsorbed onto the tungsten body is only dependent on the surface area of this body, and the amount of mercury bromide thus can be precisely selected

by properly adjusting the dimensions of the porous tungsten body, as discussed in the specification at paragraph [0030]. In this way, introduction of the desired amount can be done efficiently and easily. With the amount of bromine precisely selected, even very small lamps can be obtained which do not exhibit an undesired flicker of the arc tube, or wear of the electrodes resulting in blackening of the arc tube. Also, the amount of impurities, normally introduced together with the bromine, can be avoided, as discussed in the specification at paragraphs [0014] and [0031].

The Applicant asserts that the above highlighted claimed combination of features is not taught or suggested by the combination of teachings of Sugitani et al., Schuster and Rothwell et al. Specifically, in Sugitani et al., which corresponds to EP 0949657 discussed on page 2 of the present specification, mercury halide is vapor-deposited on a lamp component such as an electrode. With this method, however, it is difficult to control the amount of halide introduced into the discharge vessel. Accordingly, the amount of halide is usually too high which is in contrast to the amounts achieved by the claimed invention in which mercury bromide halide is adsorbed on a carrier. The Examiner admits these deficiencies in the January 28th Office Action by stating that the Sugitani et al. patent "does not specifically state how the halogen is introduced into discharge vessel" and then turns to the teachings of Schuster and Rothwell et al. to allegedly supply the missing teachings.

However, a detailed review of the Schuster patent reveals that while the patent does disclose forming a press body 14 containing mercury or a mercury alloy for use in the production of a discharge lamp, the patent contains no disclosure (either explicit or implicit) that the press body contains an adsorbed mercury bromide on sintered tungsten as presently claimed. As noted in the previous Amendment of October 28, 2003, it appears that the Examiner is relying upon the teachings of column 3, lines 9-20 of Schuster to assert the introduction of the metal halide, i.e., the remainder of the patent, particularly the abstract and column 2, line 66, to column 3 line 7, contain absolutely no discussion of a halogen or halide being introduced into the press body 14. The patentee only teaches the introduction of mercury or mercury alloy as

an electrolytic coating, and does this in an exemplary manner by teaching an electrolytic method of depositing the mercury on the porous press body material (see column 3, lines 9-20; column 4, line 44, to column 5, line 52). The metal salts, i.e., CuSO_4 , discussed in the examples only assist the electrolytic deposition of mercury (or mercury alloy) on the metal particles, e.g., iron, nickel, chromium, copper, which are eventually pressed into the press body 14 which forms the retention structure for mercury. Further, the finally formed pressed body 14 of Schuster comprises coated pressed particles of a metal such as iron, nickel, chromium and copper (col. 2, l. 35-39), which is not a sintered tungsten (i.e., heated and fused particles, see The Free Dictionary.com definition attached) as presently claimed.

The Examiner must be aware that mercury, as a metal, has very different physical and chemical properties and reacts chemically in a completely different way than mercury bromide. See the Wikipedia.com profile of mercury attached, and the Hawley's Condensed Chemical Dictionary Mercury profile of mercury bromide also attached. That is, the mercury bromide cannot be adsorbed onto a metallic carrier by an electrolytic process. If the Examiner is aware of an electrolytic process of depositing mercury bromide on metal particles, then evidence of such a teaching is requested in the next office action if the present rejections are to be maintained. In summary, Schuster nowhere discusses that a precise amount of the adsorbed substance is formed by adsorbing a monomolecular layer of the substance and regulating the amount of adsorbed substance by selecting the dimensions of the carrier.

A careful reading of Schuster would not provide any motivation or suggestion to provide an adsorbed layer of mercury bromide on a sintered tungsten substrate, since the patentee is only concerned with depositing mercury or mercury alloys (not mercury bromide) on metal suspension particles which are to be pressed (not sintered) into body for use in a discharge lamp. The Examiner's reasoning that since the smallest available metal halide pellets contain too much halogen, one of ordinary skill in the prior art would find it obvious to turn to the teachings of Schuster and place

metal halide (i.e., mercury bromide) on a tungsten body is not based on sound scientific reasoning. This is particularly emphasized by the fact that one of ordinary skill in the prior art would appreciate that the physical and chemical properties of metals, i.e., mercury, are distinctly different from its compounds, i.e., mercury bromide. Further, one of ordinary skill in the prior art would realize that a pressed particulate body (such as in Schuster) is not of the same physical structure as a sintered, i.e., heated and fused particulate, body (like the claimed sintered tungsten).

The Examiner's citation of the Rothwell et al. patent, while teaching that mercury bromide is known for use in discharge lamps to achieve a certain type of light (blue-green) and the use of tungsten as an electrode in a discharge lamp, does not teach a particular method of placing the mercury bromide into the discharge lamp and makes no mention of any cooperation between the mercury bromide and tungsten as is presently claimed. Therefore, Rothwell et al. does not remedy any of the deficiencies of the combination of Sugitani et al. and Schuster outlined above.

Since the teachings of Sugitani et al., Schuster and Rothwell et al fail to explicitly or implicitly teach the presence of a metal halide adsorbed onto a sintered tungsten body and further since the teachings of Schuster or Rothwell et al do not suggest or provide any motivation to modify the teachings of Sugitani et al. to form a mercury bromide adsorbed onto a sintered tungsten body, the rejections, under § 103(a), of claims 1, 5-9 have been set forth in error and must now be withdrawn.

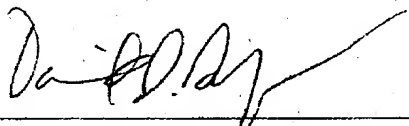
With regard to the rejection of claims 2 and 3, under 35 U.S.C. § 103(a), as being obvious in view of the combination of teachings of Sugitani et al. ('830), Schuster ('136) and Johnson ('871), and the rejection of claim 4, under 35 U.S.C. § 103(a), as being obvious in view of the combination of teachings of Sugitani et al. ('830), Schuster ('136) and van der Wolf et al. ('328), each of these rejection are also traversed for the reasons set forth in the Amendment of October 28, 2003, and further, since a review of those patent documents reveals no teaching which would render obvious to one of ordinary skill in the art the modification of the teachings of Sugitani

et al. to adsorb mercury bromide onto a sintered tungsten body for use in a discharge lamp. Therefore, a *prima facie* case of obviousness has also not been established with regard to the combination of Sugitani et al., Schuster and Johnson or van der Wolf et al, and consequently, the rejections, under § 103(a), of claims 2-4 have also been set forth in error and must also now be withdrawn.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise, which could be eliminated through discussions with Applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

Lastly, it is noted that a separate Extension of Time Petition (one month) accompanies this response along with an authorization to charge the requisite extension of time fee to Deposit Account No. 19-2380 (740145-198). However, should that petition become separated from this Amendment, then this Amendment should be construed as containing such a petition. Likewise, any overage or shortage in the required payment should be applied to Deposit Account No. 19-2380 (740145-198).

Respectfully submitted,

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